claim 1.

14. A chromium-containing half-tone phase-shift photomask which is prepared by performing a series of pattern-forming steps such as a step for forming a resist layer on a photomask blank, a step for exposing and patterning said resist layer, a developing step, a step for etching said photomask blank and a step for removing said resist layer, wherein the photomask is characterized in that patterns to be transferred onto a wafer are formed on said photomask blank for the chromium-containing half-tone phase-shift photomask according to the dry-etching method as set forth in claim 2.

15. A method for manufacturing a semiconductor circuit which comprises the steps of transferring the patterns formed on the chromium-containing half-tone phase-shift photomask as set forth in claim 13 on a wafer on which a light-sensitive material is coated, developing said light-sensitive material to form resist patterns on the wafer, or to manufacture a semiconductor circuit which comprises coexisting coarse and dense patterns corresponding to said resist patterns.

16. A method for manufacturing a semiconductor circuit which comprises the steps of transferring the patterns formed on the chromium-containing half-tone phase-shift photomask as set forth in claim 14 on a wafer on which a light-sensitive material is coated, developing said light-sensitive material to form resist patterns on the wafer, or to manufacture a semiconductor circuit which comprises coexisting coarse and dense patterns corresponding to said resist patterns.

17. A semiconductor circuit having a circuit which comprises coexisting coarse and dense patterns corresponding to the resist patterns formed by transferring said resist patterns formed on the chromium-containing half-tone phase-shift photomask as set forth in claim 13 on a wafer on which a

light-sensitive material is coated and then developing said light-sensitive material.

18. A semiconductor circuit having a circuit which comprises coexisting coarse and dense patterns corresponding to the resist patterns formed by transferring said resist patterns formed on the chromium-containing half-tone phase-shift photomask as set forth in claim 14 on a wafer on which a light-sensitive material is coated and then developing said light-sensitive material.

19. A dry-etching apparatus used in dry-etching a metal thin film as a chromium-containing half-tone phase-shift film, wherein the apparatus is provided with a sequencer for establishing dry-etching conditions, wherein said metal thin film is a chromium-containing half-tone phase-shift film consisting of a chromium film, a chromium oxide film, a chromium nitride film, chromium oxynitride film, chromium fluoride film or a laminated film thereof; wherein if an etching gas used consists of chlorine, oxygen and hydrogen gases, the relative flow rates of these gases as expressed in terms of % by volume range from 66 to 46, 17 to 11 and 18 to 41% by volume, respectively, or if an etching gas used consists of chlorine, oxygen and hydrogen chloride gases, the relative flow rates of these gases as expressed in terms of % by volume range from 58 to 44, 15 to 11 and 28 to 45% by volume, respectively; and wherein the apparatus is so designed that when inputting the parameters relating to the foregoing dry-etching conditions, directly or through a memory device of a computer, to said sequencer and then starting the dry-etching process, the dry-etching is automatically carried out under the foregoing dry-etching conditions.

20. A dry-etching apparatus comprising an etching chamber, a transport chamber, a substrate cassette bed and a sequencer for establishing dry-etching conditions, wherein four electromagnets each comprising a square-

shaped ring-like coil are provided on an outer side of said etching chamber, two each of these electromagnets being opposite to one another and making a pair, these electromagnets being so designed that when applying a low frequency current which is 90 deg. out of phase thereto, the combined magnetic field established by these two paired electromagnets can rotate in a plane parallel to a substrate at a frequency identical to that of the low frequency current, an RF electrode and an opposite electrode are disposed in said etching chamber, a transport robot for transporting said substrate is provided in said transport chamber, said transport robot being a two-joint robot having two knots, the tip of a transport arm thereof being able to undergo advancing, reciprocating and rotating motions due to the composition of rotational motions of a motor axis and these two knots within each horizontal plane, the robot thus transporting the substrate, wherein a metal thin film to be dry-etched is a chromium-containing half-tone phase-shift film consisting of a chromium film, a chromium oxide film, a chromium nitride film, chromium oxynitride film, chromium fluoride film or a laminated film thereof, wherein if an etching gas used consists of chlorine, oxygen and hydrogen gases, the relative flow rates of these gases as expressed in terms of % by volume range from 66 to 46, 17 to 11 and 18 to 41% by volume, respectively, or if an etching gas used consists of chlorine, oxygen and hydrogen chloride gases, the relative flow rates of these gases as expressed in terms of % by volume range from 58 to 44, 15 to 11 and 28 to 45% by volume, respectively, and wherein the apparatus is so designed that when inputting the parameters relating to the foregoing dry-etching conditions, directly or through a memory device of a computer, to said sequencer and then starting the dry-etching process, the dry-etching is automatically carried out under the foregoing dry-etching conditions.